

Experiments and Notes
ABOUT THE
MECHANICAL ORIGINE
OR
PRODUCTION
OF
CORROSIVENESS
AND
CORROSIBILITY.

By the Honourable
ROBERT BOYLE Esq;
Fellow of the *R. Society.*

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(I)

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SECT. I.

About the Mechanical Origine of Corrosiveness.

I Do not in the following Notes treat of *Corrosiveness* in their strict sense of the word, who ascribe this Quality only to Liquors, that are notably acid or sowre, such as *Aqua fortis*, Spirit of Salt, Vinegar,
A 2 Juice

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Juice of Lemons, &c. but, that I
may not be oblig'd to overlook Uri-
nous, Oleous, and divers other Sol-
vents, or to coin new names for their
differing Solutive Powers, I pre-
sume to employ the word *Corrosive-
ness* in a greater latitude, so as to
make it almost equivalent to the *So-
lutive* power of Liquors, referring
other Menstruums to those that are
Corrosive or fretting, (though not
always as to the most proper, yet)
as to the principal and best known
species; which I the less scruple here
to do, because I have * elsewhere
more distinctly enumerated and
sorted the Solvents of bodies.

* This refers to an Essay of the Authors about the
Usefulness of Chymistry to, &c.

The Attributes that seem the most
proper to qualifie a Liquor to be
Corrosive, are all of them Mechan-
ical, being such as are these that fol-
low:

First, That the Menstruum consist
of, or abound with, Corpuscles not

Corrosibleness or Corrosibility. 3

too big to get in at the Pores or Commissures of the body to be dissolved; nor yet be so very minute as to pass through them, as the beams of Light do through Glass; or to be unable by reason of their great slenderness and flexibility to disjoyn the parts they invade.

Secondly, That these Corpuscles be of a shape fitting them to insinuate themselves more or less into the Pores or Commissures above-mentioned, in order to the dissociating of the solid parts.

Thirdly, That they have a competent degree of solidity to disjoyn the Particles of the body to be dissolved; which Solidity of Solvent corpuscles is somewhat distinct from their bulk, mention'd in the first Qualification; as may appear by comparing a stalk of Wheat and a metalline Wire of the same *Diameter*, or a flexible wand of Osier of the bigness of ones little finger, with a rigid rod of Iron of the same length and thickness.

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Fourthly, That the Corpuscles of the Menstruum be agile and advantaged for motion, (such as is fit to disjoyn the parts of the invaded body) either by their shape, or their minuteness, or their fitness to have their action befriended by adjuvant Causes; such as may be (*first*) the pressure of the Atmosphere, which may impell them into the Pores of bodies not fill'd with a Substance so resisting as common Air: As we see, that water will by the prevalent pressure of the Ambient, whether Air or Water, be raised to the height of some inches in capillary Glasses, and in the pores of Sponges, whose consistent parts being of easier cession than the sides of Glass-pipes, those Pores will be enlarged, and consequently those sides disjoyn'd, as appears by the dilatation and swelling of the Sponge: And (*secondly*) the agitation, that the intruding Corpuscles may be fitted to receive in those Pores or Commisures by the transcurfion of some
subtile

Corrosibleness or Corrosibility. 5

subtile ethereal matter; or by the numerous knocks and other pulses of the swimming or tumbled Corpuscles of the Menstruum it self, (which being a fluid body, must have its small parts perpetually and variously moved) whereby the engaged Corpuscles, like so many little Wedges and Leavers, may be enabled to wrench open, or force asunder the little parts between which they have insinuated themselves. But I shall not here prosecute this Theory, (which, to be handled fully, would require a discourse apart) since these Conjectures are propos'd but to make it probable in the general, That the *Corrosiveness* of bodies may be deduced from Mechanical Principles: But whether best from the newly propos'd ones, or any other, need not be anxiously consider'd in these Notes, where the things mainly intended and rely'd on, are the Experiments and *Phænomena* themselves.

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EXPER. I.

TIs obvious, that, though the recently exprest Juice of Grapes be sweet, whilst it retains the Texture that belongs to it as 'tis new, (especially if it be made of some sorts of Grapes that grow in hot Regions,) yet after fermentation, 'twill, in tract of time, as 'twere spontaneously, degenerate into Vinegar. *In which* Liquor, to a multitude of the more solid Corpuscles of the Must, their frequent and mutual Attritions may be supposed to have given edges like those of the blades of swords or knives; and *in which*, perhaps, the confused agitation that preceded, extricated, or, as it were, unsheathed some acid particles, that (deriv'd from the sap of the Vine, or, perchance more originally, from the juice of the Earth) were at first in the Must, but lay conceal'd, and as it were sheathed, among

Corrosiveness or Corrosibility. 7

among the other particles where-
with they were associated, when
they were prest out of the Grapes.
Now this Liquor, that by the fore-
mentioned (or other like) Mecha-
nical Changes is become Vinegar,
does so abound with Corpuscles,
which, on the account of their edges,
or their otherwise sharp and pene-
trative shape, are Acid and Corro-
sive, that the better sort of it will,
without any preparation, dissolve
Coral, Crabs-eyes, and even some
Stones, *Lapis stellaris* in particular,
as also *Minium*, (or the *Calx* of
Lead) and even crude Copper, as
we have often tried. And not one-
ly the distill'd Spirit of it will do
those things more powerfully, and
perform some other things that meer
Vinegar cannot; but the saline par-
ticles, wont to remain after Distil-
lation, may, by being distill'd and
cohobated *per se*, or by being skil-
fully united with the foregoing Sp-
rit, be brought to a *Menstruum* of
no small efficacy in the dissolution,
and

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and other preparations of metalline
bodies, too compact for the meer
Spirit it self to work upon.

From divers other sweet things
also may Vinegar be made; and even
of Honey, skilfully fermented with
a small proportion of common wa-
ter, may be made a Vinegar strong-
er than many of the common Wine-
vinegars; as has been affirmed to
me by a very candid Physician,
who had occasion to deal much in
Liquors.

EXPER. II.

NOt onely several dry Woods,
and other Bodies that most of
them pass for insipid, but Honey
and Sugar themselves afford by Di-
stillation Acid Spirits that will dis-
solve Coral, Pearls, &c. and will al-
so corrode some Metals and metal-
line Bodies themselves; as I have often
found by Trial. So that the vio-
lent Operation of the fire, that de-
stroyes

Corrosivenes or Corrosibility. 9

stroys what they call the *Form* of the distill'd body, and works as a Mechanical Agent by agitating, breaking, dissipating, and under a new constitution reassembling the parts, procures for the Distiller an Acid Corrosive Menstruum; which *whether* it be brought to pass by making the Corpuscles rub one another into the figure of little sharp blades, *or* by splitting some solid parts into sharp or cutting Corpuscles, *or* by unsheathing, as it were, some parts, that, during the former Texture of the body, did not appear to be acid; *or* whether it be rather effected by some other Mechanical way, may in due time be further considered.

EX-

EXPER. III.

TIs observ'd by Refiners, Goldsmiths and Chymists, that *Aqua Fortis* and *Aqua Regia*, which are Corrosive Menstruums, dissolve Metals, the former of them Silver, and the latter Gold, much more speedily and copiously when an external heat gives their intestine motions a new degree of Vehemency or Velocity, which is but a mechanical thing; and yet this superadded measure of Agitation is not onely in the abovemention'd Instances a powerfully assistant Cause in the Solutions made by the lately mention'd Corrosive Liquors, but is that without which some Menstruums are not wont sensibly to corrode some bodies at all, as we have tried in keeping Quick-silver in three or four times its weight of Oyl of Vitriol; since in this Menstruum I found not the Mercury to be dissolved or corroded,

Corrosibleness or Corrosibility. 11

roded, though I kept it a long time in the Cold: Whereas, when the Oyl of Vitriol was excited by a convenient heat, (which was not faint) it corroded the Mercury into a fine white *Calx* or powder, which, by the affusion of fair water, would be presently turn'd into a yellowish *Calx* of the colour and nature of a Turbith. I remember also, that having for trials sake dissolv'd in a weak Spirit of Salt, a fourth part of its weight of fine Crystals of Nitre, we found, that it would not in the cold (at least during a good while that we waited for its operation) dissolve Leaf-gold; but when the *Mensstruum* was a little heated at the fire, the Solution proceeded readily enough. And in some cases, though the external heat be but small, yet there may intervene a brisk heat, and much cooperate in the dissolution of a Body; as, for instance, of Quick-silver in *Aqua Fortis*. For it is no prodigy to find, that when a full proportion of that fluid Metal has been
been

12 **Of the Mechanical Origine of**
been taken, the Solution, though at
first altogether liquid, and as to sense
uniform, comes to have after a
while a good quantity of coagula-
ted or crySTALLIZ'd matter at the bot-
tom, of which the cause may be,
that in the very act of Corrosion
there is excited an intense degree of
heat, which conferring a new de-
gree of agitation to the Menstruum,
makes it dissolve a good deal more,
than afterwards, when the Conflict
is over, it is able to keep up.

EXPER. IV.

WE have observed also, that
Agitation does in some ca-
ses so much promote the Dissolutive
power of Saline bodies, that though
they be not reduc'd to that subtilty
of parts, to which a strong Distil-
lation brings them; yet they may in
their grosser and cruder form have
the power to work on Metals; as I
elsewhere shew, that by barely boil-
ing

Corrosiveness or Corrosibility. 13

ing some Solutions of Salts of a convenient structure, as Nitre, Sal Armoniac, &c. with foliated Gold, Silver, &c. we have corroded these Metals, and can dissolve some others. And by boiling crude Copper (in Filings) with Sublimate and common water, we were able, in no long time, to make a Solution of the Metal.

EXPER. V.

Sometimes also, so languid an Agitation, as that which seems but sufficient to keep a Liquor in the state of fluidity, may suffice to give some dry bodies a corroding power, which they could not otherwise exercise; as in the way of writing ones name (or a *Motto*) upon the blade of a knife with common Sublimate: For, if having very thinly overlaid which side you please with Beeswax, you write with a bodkin or some pointed thing upon it; the
Wax

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Wax being thereby removed from
the strokes made by the sharp bo-
dy, 'tis easie to etch with Sublimate;
since you need but strew the pow-
der of it upon the place bared of
the Wax, and wet it well with
meer common water; for strong
Vinegar is not necessary. For after
a while all the parts of the blade
that should not be fretted, being
protected by the Case or Film of
Wax, the Sublimate will corrode
onely where way has been made
for it by the bodkin, and the Let-
ters will be more or less deeply in-
graven (or rather etch'd) accord-
ing to the time the Sublimate is suf-
fer'd to lye on. And if you aim
onely at a legible impression, a few
minutes of an hour (as four or five)
may serve the turn.

EX.

EXPER. VI.

THis brings into my mind an Observation I have sometimes had occasion to make, that I found more useful than common, and it is, That divers Bodies, whether distill'd or not distill'd, that are not thought capable of dissolving other Bodies, because in moderate degrees of heat they will not work on them, may yet by intense degrees of heat be brought to be fit Solvents for them. To which purpose I remember, that having a distill'd Liquor, which was rather sweet to the taste, than either acid, lixivate or urinous, though for that reason it seem'd unfit to work on Pearls, and accordingly did not dissolve them in a considerable time, wherein they were kept with it in a more than ordinarily warm digestion; yet the Glass being for many hours (amounting perhaps to some days.) kept in such

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an heat of sand as made the Liquor
boil, we had a Dissolution of Pearls,
that uniting with the Menstruum
made it a very valuable Liquor.
And though the Solvents of crude
Gold, wont to be employed by
Chymists, are generally distill'd Li-
quors that are acid, and in the lately
mention'd Solvent, made of crude
Salts and common water, Acidity
seem'd to be the predominant quali-
ty (which makes the use of Soluti-
ons made in *Aqua Regia*, &c. sus-
pected by many Physicians and Chy-
mists;) yet fitly chosen Alcalizate
Bodies themselves, as repugnant as
they use to be to Acids, without
the help of any Liquor will be en-
abled by a melting Fire in no long
time to penetrate and tear asunder
the parts even of crude Gold; so
that it may afterwards be easily ta-
ken up in Liquors that are not acid,
or even by water it self.

E X.

EXPER. VII.

THe Tract about Salt-peter, that gave occasion to these Annotations, may furnish us with an eminent Instance of the Production of Solvents. For, though pure Salt-peter it self, when dissolv'd in water, is not observ'd to be a Menstruum for the Solution of the Metals hereafter to be named, or so much as of Coral it self; yet, when by a convenient Distillation its parts are split, if I may so speak, and by Attrition, or other Mechanical ways of working on them, reduc'd to the shapes of Acid and Alcalizate Salts, it then affords two sorts of Menstruums of very differing natures, which betwixt them dissolve or corrode a great number and variety of Bodies; as the Spirit of Nitre without addition is a Solvent for most Metals, as Silver, Mercury, Copper, Lead, &c. and also divers Mineral Bodies, as

B 2

Tin-

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Tin-glafs, Spelter, *Lapis Calaminaris*,
&c. and the fixed Salt of Nitre ope-
rates upon Sulphureous Minerals, as
common Sulphur, Antimony, and di-
vers other Bodies, of which I else-
where make mention.

EXPER. VIII.

BY the former Trials it has ap-
pear'd, that the increase of Mo-
tion in the more penetrating Corpu-
scles of a Liquor, contributes much
to its Solutive power; and I shall
now adde, that the Shape and Size,
which are Mechanical affections, and
sometimes also the Solidity of the
same Corpuscles does eminently con-
cur to qualifie a Liquor to dissolve
this or that particular body. Of
this, even some of the more famili-
ar practices of Chymists may supply
us with Instances. For there is no
account so probable as may be given
upon this supposition, why *Aqua For-*
tis, which will dissolve Silver, without
medling

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medling with Gold, should, by the addition of a fourth part of its weight of Sal Armoniac, be turn'd into *Aqua Regia*, which, without medling with Silver, will dissolve Gold. But there is no necessity of having recourse to so gross and compounded a Body as Sal Armoniac to enable *Aqua Fortis* to dissolve Gold: For, the Spirit of common Salt alone being mingled in a due proportion, will suffice for that purpose. Which (by the way) shews, that the Volatile Salt of Urine and Soot, that concur to the making up of Sal Armoniac, are not necessary to the dissolution of Gold, for which a Solvent may be made with *Aqua Fortis* and crude Sea-salt. I might adde, that the Mechanical affections of a *Menstruum* may have such an interest in its dissolutive power, that even Mineral or Metalline Corpuscles may become useful Ingredients of it, though perhaps it be a distill'd Liquor; as might be illustrated by the Operations of some compounded Solvents, such as

20 Of the Mechanical Origine of
is the Oyl of Antimony made by re-
peated Rectifications of what Chy-
mists call its *Butter*, which, whatever
some say to the contrary, does
much abound in Antimonial Sub-
stance.

EXPER. IX.

BUt I shall return to our *Aqua Re-*
gia, because the mention I had
occasion to make of that Solvent
brought into my mind what I de-
vis'd, to make it probable, that a
smaller change, than one would
lightly imagine, of the bulk, shape,
or solidity of the Corpuscles of a
Menstruum may make it fit to dis-
solve a Body it would not work on
before. And this I the rather at-
tempted, because the warier sort of
Chymists themselves are very shy
of the inward use or preparations
made of Gold by the help of *Aqua*
Fortis, because of the odious stink
they find, and the venenosity they
suspect

Corrosiveness or Corrosibility. 21

suspect in that corrosive Menstruum : Whereas Spirit of Salt we look upon as a much more innocent Liquor, whereof, if it be but diluted with fair water or any ordinary drink, a good Dose may be safely given inwardly, though it have not wrought upon Gold or any other body, to take off its acrimony. But, whether or no this prove of any great use in Physick, wherein perhaps, if any quantity of Gold be to be dissolved, a greater proportion of Spirit of Nitre would be needed; the success will not be unfit to be mention'd in reference to what we were saying of Solvents. For, whereas we find not that our *Spirit of Salt* here in *England* will at all dissolve crude Gold, we found, that by putting some Leaf-gold into a convenient quantity of good Spirit of Salt, when we had dropt-in Spirit of Nitre (shaking the Glass at each drop,) till we perceived, that the mixture was just able in a moderate heat to dissolve the Gold, we found, that

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we had been oblig'd to employ but
after the rate of twelve drops of the
latter Liquor to an ounce of the for-
mer ; so that, supposing each of these
drops to weigh a grain, the fortieth
part of Spirit of Nitre being added,
served to turn the Spirit of Salt into
a kind of *Aqua Regia*. But to know
the proportion otherwise than by
guess, we weigh'd six other drops of
the same Spirit of Salt, and found
them to amount not fully to three
grains and an half: Whence it ap-
peared, that we added but about a
seventieth part of the Nitrous Spirit
to that of Salt.

The Experiments that have been
hitherto recited, relate chiefly to the
Production of Corrosive Menstru-
ums ; and therefore I shall now adde
an account of a couple of Trials,
that I made manifestly to lessen or
quite to destroy Corrosiveness in
Liquors very conspicuous for that
quality.

E X.

EXPER. X.

WHereas one of the most corrosive Menstruums, that is yet known, is *Oyl of Vitriol*, which will fret in pieces both divers Metals and Minerals, and a great number and variety of animal and vegetable bodies; yet if you digest with it for a while onely an equal weight of highly rectified Spirit of Wine, and afterwards distill the mixture very warily, (for else the Experiment may very easily miscarry,) you may obtain a pretty deal of Liquor not corrosive at all, and the remaining substance will be reduc'd partly *into* a Liquor, which, though acid, is not more so than one part of good Oyl of Vitriol will make ten times as much common water, by being well mingled with it; *and* partly *into* a dry substance that has scarce any taste at all, much less a corrosive one.

E X-

EXPER. XI.

ANd though good *Aqua Fortis* be the most generally employed of corrosive Menstruums, as being capable of dissolving or corroding, not onely many Minerals, as Tinglass, Antimony, Zinke, &c. but all Metals except Gold, (for, though it make not a permanent Solution of crude Tin, it quickly frets the parts asunder, and reduces it to an immalleable substance;) yet to shew, how much the power of *corroding* may be taken away by changing the Mechanical Texture of a Menstruum, even without seeming to destroy the fretting Salts; I practis'd (and communicated to divers *Virtuosi*) the following Experiment, elsewhere mentioned to other purposes.

We took equal parts of good *Aqua Fortis*, and highly dephlegm'd Spirit of Wine, and having mingled them warily and by degrees,
(with-

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(without which caution the Operation may prove dangerous,) we united them by two or three Distillations of the whole mixture; which afterwards we found not to have the least fretting taste, and to be so deprived of its corrosive nature, that it would not work upon Silver, though by Precipitation or otherwise reduced to very small parts; nay, it would scarce sensibly work in a good while on Filings of Copper, or upon other bodies, which meer Vinegar, or perhaps Rhenish wine will corrode. Nay, I remember, that with another Spirit, (that was not Urinous) and afterwards with *Alkohol* of Wine we shew'd a more surprising *Specimen* of the power of either destroying or debilitating the Corrosiveness of a *Menstruum*, and checking its Operation. For, having caused a piece of Copper plate to be put into one ounce of *Aqua Fortis*, when this Liquor was eagerly working upon the Metal, I caus'd an ounce of the *Alkohol* of Wine, or the

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the other Spirit to be poured, (which it should warily be) upon the agitated mixture; whose effervescence, at the first instant, seemed to be much increased, but presently after was checked, and the Corrosiveness of the Menstruum being speedily disabled or corrected, the remaining Copper was left undissolved at the bottom.

Nor are these the onely acid Menstruums that I have many years since been able to correct by such a way: For I applied it to others, as Spirit of Nitre, and even *Aqua Regis* itself; but it has not an equal operation upon all, and least of all (as far as I can remember) upon Spirit of Salt; as on the other side strong Spirit of Nitre was the *Menstruum* upon which its effects were the most satisfactory.

Most of the Chymists pretend, that the Solutions of bodies are perform'd by a certain Cognation and Sympathy between the Menstruum and the body it is to work upon. And

Corrosibleness or Corrosibility. 27

And it is not to be denied, that in divers Instances there is, as it were, a Consanguinity between the Menstruum and the body to be dissolved; as when Sulphur is dissolved by Oyls whether exprest or distill'd: But yet, as the opinion is generally proposed, I cannot acquiesce in it, partly because there are divers Solutions and other *Phænomena*, where it will not take place, and partly because even in those instances wherein 'tis thought most applicable, the effect seems to depend upon Mechanical Principles.

EXPER. XII.

And first, 'twill be difficult to shew, what Consanguinity there is between Sal Gem, and Antimony, and Iron, and Zinke, and Bread, and Camphire; and *Lapis Calaminaris*, and flesh of divers kinds, and Oyster-shells, and Harts-horn, and Chalk, and Quick-lime; some of which belong

28 Of the Mechanical Origine of
ong to the Vegetable, some to the
Mineral, and some to the Animal
Kingdom; and yet all of them and
divers others (as I have tried) may,
even without the assistance of exter-
nal Heat, be dissolved or corroded
by one single Mineral Menstruum,
Oyl of Vitriol. And which is not
to be neglected on this occasion,
some of them may be bodies, sup-
posed by Chymists to have an Anti-
pathy to each other in point of Cor-
rosion or Dissolution.

EXPER. XIII.

I Observe also, that a Dissolution
may be made of the same body
by *Menstruums*, to which the Chy-
mists attribute (as I just now ob-
served they did to some Bodies) a
mutual Antipathy, and which there-
fore are not like to have a Sympathy
with the same third body; as I found
by trial, that both *Aqua Fortis*, and
Spirit of Urine, upon whose mix-
ture

Corrosiveness or Corrosibility. 29

ture there insues a conflict with a great effervescence, will each of them apart readily dissolve crude Zinke, and so each of them will, the Filings of Copper. Not to mention, that pure Spirit of Wine and Oyl of Vitriol, as great a difference as there is between them, in I know not how many respects, and as notable a heat as will insue upon their Commixture, will each of them dissolve Camphire; to which may be added other instances of the like nature. As for what is commonly said, that Oyls dissolve Sulphur, and Saline Menstruums Metals, because (as they speak) *Simile simili gaudet*: I answer, That where there is any such similitude, it may be very probably ascribed, not so much, with the Chymists that favour *Aristotle*, to the essential forms of the bodies that are to work on each other, nor, with the meer Chymists, to their Salt, or Sulphur, or Mercury, as such; but to the congruity between the pores and figures of the Menstruum, and the

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the body dissolved by it, and to
some other Mechanical Affections of
them.

EXPER. XIV.

FOr Silver, for example, not only will be dissolved by Nitre which they reckon a Salt, but be amalgam'd with, and consequently dissolved by, Quicksilver, and also by the operation of Brimstone, be easily incorporated with that Mineral which Chymists are wont to account of so oleaginous a nature, and insoluble in *Aqua Fortis*.

EXPER. XV.

ANd as for those Dissolutions that are made with Oylie and inflammable Menstruums, of common Sulphur and other inflammable bodies, the Dissolution does not make for them so clearly as they imagine.

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imagine. For if such Menstruums operate, as is alledged, upon the account of their being, as well as the bodies they work upon, of a sulphureous nature, whence is it that highly rectified Spirit of Wine, which according to them must be of a *most sulphureous* nature, since being set on fire 'twill flame all away without leaving one drop behind it, will not (unless perhaps after a tedious while) dissolve even Flowers of Brimstone, which essential as well as express'd Oyls will easily take up; as Spirit of Wine it self also will do almost in a trice, if (as we shall see anon) by the help of an Alkali the Texture of the Brimstone be alter'd, though the onely thing that is added to the Sulphur being an incombustible substance, is nothing near of so sulphureous a nature as the Flowers, and need have no Consanguinity upon the score of its Origine with Spirit of Wine, as 'tis alledged that Salt of Tartar has; since I have tried, That fixt Nitre,

C

em-

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employ'd instead of it, will do the
same.

EXPER. XVI.

THe mention of *Nitre* brings in-
to my mind, that the Salt-pe-
ter being wont to be lookt upon by
Chymists as a very inflammable bo-
dy, ought, according to them, to
be of a very sulphureous nature;
yet we find not that 'tis in Chymical
Oyls, but in water, readily dissol-
ved. And whereas Chymists tell
us, that the Solutions of Alcalys,
such as Salt of Tartar, or of Pot-
ashes in common Oyls, proceed
from the great cognation between
them, I demand, whence it happens,
that Salt of Tartar will by boiling
be dissolved in the exprest Oyl of
Almonds, or of Olives, and be re-
duc'd with it to a soapy body, and
that yet with the essential Oyl of Ju-
niper or Aniseeds, &c. where what
they call the Sulphur is made pure
and

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and penetrant, being freed from the earthy, aqueous and feculent parts, which Distillation discovers to be in the exprest Oyls, you may boil Salt of Tartar twenty times as long without making any Soap of them, or perhaps any sensible Solution of the Alkaly. And Chymists know, how difficult it is, and how unsuccessfully 'tis wont to be attempted to dissolve pure Salt of Tartar in pure Spirit of Wine, by digesting the not peculiarly prepar'd Salt in the cognate Menstruum. I will not urge, that, though the most conspicuous mark of Sulphur be inflammability, and is in an eminent degree to be found in Oyl as well as Sulphur; yet an Alkaly and water which are neither singly, nor united inflammable, will dissolve common Sulphur.

EXPER. XVII.

BUt to make it probable against the Chymists, (for I propose it but as an argument *ad hominem*) that the Solution of Sulphur in exprest Oyls depends upon somewhat else besides the abundance of the second Principle in both the bodies; I will adde to what I said before, an affirmation of divers Chymical Writers themselves, who reckon *Aqua Regis*, which is plainly a Saline Menstruum, and dissolves Copper, Iron, Coral, &c. like Acid Liquors, among the Solvents of Sulphur, and by that power among other things distinguish it from *Aqua Fortis*. And on the other side if, there be a Congruity betwixt an exprest Oyl and another body, though it be such as, by its easie Dissolubleness in Acid Salts, Chymists should pronounce to be of a saline nature, an exprest Oyl will readily enough work upon it,

Corrosibenes or Corrosibility. 35

it; as I have tried by digesting even crude Copper in Filings with Oyl of sweet Almonds, which took up so much of the metal as to be deeply coloured thereby, as if it had been a Corrosive Liquor: Nay, I shall adde, that even with Milk, as mild a Liquor as 'tis, I have found by Trial, that without the help of fire a kind of Dissolution may, though not in few hours, be made of crude Copper, as appear'd by the greenish blew colour the Filings acquired, when they had been well drenched in the Liquor, and left for a certain time in the Vessel, where the air had very free access to them.

EXPER. XVIII.

BESIDES the Argument *ad hominem*, newly drawn from *Aqua Regia*, it may be proper enough to urge another of the same kind upon the generality of the *Helmontians* and *Paracelsians*, who admit what the Heads of their Sects deliver concerning the Operations of the *Alkabeft*. For whereas 'tis affirm'd, that this irresistible *Menstruum* will dissolve all tangible bodies here below, so as they may be reduc'd into insipid water; as on the one side 'twill be very hard to conceive how a specified *Menstruum* that is determin'd to be either Acid, or Lixivate, or Urinous, &c. should be able to dissolve so great a variety of Bodies of differing and perhaps contrary natures, in some whereof Acids, in other Lixivate Salts, and in others Urinous are predominant; so on the other side, if the *Alkabeft* be not a speci-

Corrosiveness or Corrosibility. 37

specificated Menstruum, 'twill very much disavour the Opinion of the Chymists, that will have some Bodies dissoluble onely by Acids as such, others by fixt Alkalys, and others again by Volatile Salts; since a Menstruum, that is neither Acid, Lixivate, nor Urinous, is able to dissolve bodies, in some of which one, and in others another of those Principles is predominant: So that, if a Liquor be conveniently qualified, it is not necessary that it should be either Acid to dissolve Pearl or Coral, or Alkalizate to dissolve Sulphur. But upon what Mechanical account an analyzing Menstruum may operate, is not necessary to be here determin'd. And I elsewhere offer some thoughts of mine about it.

EXPER. XIX.

IF we duly reflect upon the known process that Chymists are wont to employ in making *Mercurius dulcis*, we shall find it very favourable to our *Hypothesis*. For though we have already shewn in the V. Experiment, and 'tis generally confest, that common Sublimate made of Mercury is a highly corrosive body; yet, if it be well ground with near an equal weight of Quicksilver, and be a few times sublimed, (to mix them the more exactly) it will become so mild, that 'twill not so much as taste sharp upon the tongue; so that Chymists are wont to call it *Mercurius dulcis*: And yet this Dulcification seems to be performed in a Mechanical way. For most part of the Salts, that made the Sublimate so Corrosive, abide in the *Mercurius dulcis*; but by being compounded with more Quicksilver, they

Corrosibleness or Corrosibility. 39

they are diluted by it, and (which is more considerable) acquire a new Texture, which renders them unfit to operate, as they did before, when the fretting Salts were not joyn'd with a sufficient quantity of the Mercury to inhibit their corrosive activity. It may perhaps somewhat help us to conceive, how this change may be made, if we imagine, *that* a company of meer Knife-blades be first fitted with Hafts, which will in some regard lessen their wounding power by covering or casing them at that end which is design'd for the handle; (though their insertion into those Hafts, turning them into Knives, makes them otherwise the fitter to cut and pierce) and *that* each of them be *afterwards* sheathed, (which is, as it were, a hastening of the Blades too;) for then they become unfit to cut or stab, as before, though the Blades be not destroyed: Or else we may conceive these Blades without Hafts or Sheaths to be tied up in bundles,
or

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or as it were in little faggots with
pieces of wood, somewhat longer
than themselves, opportunely plac-
ed between them. For neither in
this new Constitution would they
be fit to cut and stab as before. And
by conceiving the edges of more or
fewer of the Blades to be turn'd in-
wards, and those that are not, to
have more or less of their points
and edges to be sheath'd, or other-
wise cover'd by interpos'd bodies,
one may be help'd to imagine, how
the genuine effects of the Blades
may be variously lessen'd or diversifi'd.
But, whether these or any other
like changes of Disposition be fancy'd,
it may by Mechanical Illustrations
become intelligible, how the Corrosive
Salts of common Sublimate may lose
their efficacy, when they are united
with a sufficient quantity of Quicksilver
in *Mercurius dulcis*: In which new state
the Salts may indeed in a Chymical
phrase be said to be satiated; but
this Chymical phrase does not ex-
plicate

Corrosibleness or Corrosibility. 41

licate how this Saturation takes away the Corrosiveness from Salts that are still actually present in the sweet Mercury. And by Analogy to some such Explications as the above propos'd, a possible Account may be render'd, why fretting Salts do either quite lose their sharpness, as Alkalies, whilst they are imbodied with Sand in common Glass; or lose much of their Corrosive Acidity, as Oyl of Vitriol does when with Steel it composes *Vitriolum Martis*; or else are transmuted or disguis'd by conjunction with some corroded bodies of a peculiar Texture, as when *Aqua Fortis* does with Silver make an extreamly bitter Salt or Vitriol, and with Lead one that is positively sweet almost like common *Saccharum Saturni*.

EX-

EXPER. XX.

TO shew, how much the Efficacy of a Menstruum may depend even upon such seemingly slight Mechanical Circumstances as one would not easily suspect any necessity of, I shall employ an Experiment, which though the unpractis'd may easily fail of making well, yet, when I tried it after the best manner, I did it with good success. I put then upon Lead a good quantity of well rectified *Aqua Fortis*, in which the Metal, as I expected, continued undissolved; though, if the Chymists say truly that the dissolving power of the *Menstruum* consists onely in the acid Salts that it abounds with, it seems naturally to follow, that the more abundance of them there is in a determinate quantity of the Liquor, it should be the more powerfully

Corrosiveness or Corrosibility. 43

fully able to dissolve Metalline and Mineral bodies. And in effect we see, that, if Corrosive Menstruums be not sufficiently dephlegmed, they will not work on divers of them. But, notwithstanding this plausible Doctrine of the Chymists, conjecturing that the Saline Particles that swam in our *Aqua Fortis* might be more throng'd together, than was convenient for a body of such a Texture of Saline parts, and such intervals between them, I diluted the Menstruum by adding to it what I thought fit of fair water, and then found, that the desired Congruity betwixt the Agent and the Patient emerged, and the Liquor quickly began to fall upon the Metal and dissolve it. And if you would try an Experiment to the same purpose, that needs much less circumspection to make it succeed, you may, instead of employing Lead, reiterate what I elsewhere mention my self to have tried with
Silver,

44 Of the Mechanical Origine of Silver, which would not dissolve in too strong *Aqua fortis*, but would be readily fallen upon by that Liquor, when I had weaken'd it with common water.

And this it may suffice to have said at present of the power or faculty that is found in some bodies of Corroding or Dissolving others. Whereof I have not found among the *Aristotelians*, I have met with, so much as an Offer at an Intelligible account. And I the less expect the vulgar Chymists will from their Hypostatical Principles afford us a Satisfactory one, when, besides the Particulars that from the nature of the things and *Helmont's* Writings have been lately alledg'd against their *Hypothesis*, I consider, how slight accounts they are wont to give us even of the familiar *Phænomena* of Corrosive Liquors. For if, for example, you ask a vulgar Chymist why *Aqua fortis* dissolves Silver and Copper,

tis

Corrosibleness or Corrosibility. 45

'tis great odds but he will tell you, 'tis because of the abundance of fretting Salt that is in it, and has a cog-nation with the Salts of the Metal. And if you ask him, why Spirit of Salt dissolves Copper, he will tell you 'tis for the same reason; and yet, if you put Spirit of Salt, though very strong, to *Aqua fortis*, this Li- quor will not dissolve Silver, be- cause upon the mixture, the Liquors acquire a new Constitution as to the Saline Particles, by vertue of which the mixture will dissolve, instead of Silver, Gold. Whence we may ar- gue against the Chymists, that the Inability of this compounded Liquor to work on Silver does not proceed from its being weaken'd by the Spi- rit of Salt; as well because, accord- ing to them, Gold is far the more compact metal of the two, and re- quires a more potent Menstruum to work upon it, as because this same compounded Liquor will readily dis- solve Copper. And to the same pur- pose

46 Of the Mechanical Origine of
pose with this Experiment I should
alledge divers others, if I thought
this the fittest place wherein I could
propose them.

SECT.

SECT. II.

About the Mechanical Origine of CORRO- SIBILITY.

Corrosibility being the quality that answers Corrosiveness, he that has taken notice of the Advertisement I formerly gave about my use of the Term *Corrosiveness* See the beginning of the first Section. in these Notes, may easily judge, in what sense I employ the name of the other Quality; which (whether you will stile it Opposite or Conjugate) for want of a better word, I call *Corrosibility*.

This *Corrosibility* of Bodies is as well as their Corrosiveness a Relative thing; as we see, that Gold, for instance, will not be dissolved

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by

48 Of the Mechanical Origine of
by *Aqua fortis*, but will by *Aqua
Regis*; whereas Silver is not solu-
ble by the latter of these Menstru-
ums, but is by the former. And this
relative Affection, on whose ac-
count a Body comes to be corrodi-
ble by a *Menstruum*, seems to consist
chiefly in *three* things, which all of
them depend upon Mechanical Prin-
ciples.

Of these Qualifications the *first*
is, that the Body to be corroded be
furnish'd with Pores of such a big-
ness and figure, that the Corpuscles
of the Solvent may enter them, and
yet not be much agitated in them
without giving brisk knocks or
shakes to the solid parts that make
up the walls, if I may so call them,
of the Pores. And 'tis for want of
this condition, that Glass is penetra-
ted in a multitude of places, but not
dissipated or dissolv'd by the incident
beams of Light, which permeate its
Pores without any considerable re-
sistance; and though the Pores and
Commissures of a Body were less
mi-

Corrosibleness and Corrosibility. 49

minute, and capable of letting in some grosser Corpuscles, yet if these were, for want of solidity or rigidity, too flexible, or were of a figure incongruous to that of the Pores they should enter, the Dissolution would not insue; as it happens when pure Spirit of Wine is in the cold put upon Salt of Tartar, or when *Aqua fortis* is put upon powder of Sulphur.

The *second* Qualification of a Corrodible Body is, that its consistent Corpuscles be of such a Bulk and Solidity, as does not render them incapable of being disjoyn'd by the action of the insinuating corpuscles of the Menstruum. Agreeable to this and the former Observation is the practice of Chymists, who oftentimes, when they would have a Body to be wrought on by a Menstruum otherwise too weak for it in its crude estate, dispose it to receive the action of the Menstruum by previously opening it, (as they speak) that is, by enlarging the Pores, making

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King a comminution of the Corpu-
scles, or weakening their Cohesion.
And we see, that divers Bodies are
brought by fit preparations to be re-
soluble in Liquors that would not
work on them before. Thus, as was
lately noted, Lime-stone by Cal-
cination becomes (in part) disso-
luble in water; and some Metalline
Calces will be so wrought on by Sol-
vents, as they would not be by the
same Agents, if the preparation of
the Metalline or other Body had not
given them a new Disposition. Thus,
though crude Tartar, especially in
lumps, is very slowly and difficultly
dissoluble in cold water, yet when
'tis burnt it may be presently dissol-
ved in that Liquor; and thus,
though the Filings and the Calx of
Silver will not be at all dissolv'd by
common water or Spirit of Wine;
yet if by the interposition of the
Saline Particles of *Aqua Fortis*, the
Lunar Corpuscles be so disjoyn'd, and
suffer such a comminution as they do
in Crystals of Lune, the Metal thus
pre-

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prepared and brought with its Saline Additament into a new Texture will easily enough dissolve, not only in water, but, as I have tried, in well rectified Spirit of Wine. And the like Solubility I have found in the Crystals of Lead made with Spirit of Verdigrease, or good distill'd Vinegar, and in those of Copper made with *Aqua Fortis*.

The *last* Disposition to Corrosibility consists in such a cohesion of the parts, whereof a Body is made up, as is not too strict to be superable by the action of the *Menstruum*. This Condition, though of kin to the former, is yet somewhat differing from it, since a body may consist of parts either bulky or solid, which yet may touch one another in such small portions of their Surfaces, as to be much more easily dissociable than the minute or less solid parts of another Body, whose contact is more full and close, and so their Cohesion more strict.

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By what has been said it may seem probable, that, as I formerly intimated, the Corrosibility of Bodies is but a Mechanical Relation, resulting from the Mechanical Affections and Contexture of its parts, as they intercept Pores of such sizes and figures as make them congruous to those of the Corpuscles of the *Menstruum*, that are to pierce between them, and disjoyn them.

That the Quality, that disposes the body it affects to be dissolv'd by Corrosive and other Menstruums, does (as hath been declared) in many cases depend upon the Mechanical Texture and Affections of the body in reference to the Menstruum that is to work upon it, may be made very probable by what we are in due place to deliver concerning the Pores of Bodies and Figures of Corpuscles. But yet in compliance with the design of these Notes, and agreeably to my custom on other Subjects, I shall subjoyn a few Experiments on this occasion also.

E X.

EXPER. I.

IF we put highly rectified Spirit of Wine upon crude Sulphur, or even Flowers of Sulphur, the Liquor will lie quietly thereon, especially in the cold, for many hours and days without making any visible Solution of it; and if such exactly dephlegmed Spirit were put on very dry Salt of Tartar, the Salt would lie in an undissolved powder at the bottom: and yet, if before any Liquor be employed, the Sulphur be gently melted, and then the Alkali of Tartar be by degrees put to it, and incorporated with it; as there will result a new Texture discoverable to the eye by the new colour of the Composition, so there will emerge a disposition that was not before in either of the Ingredients, to be dissolved by Spirit of Wine; insomuch, that though the mixture be kept till it be quite cold,

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it long after too, provided it be
carefully secur'd from the access of
the air, the Spirit of Wine being
put to it, and shaken with it, will, if
you have gone to work aright, ac-
quire a yellow Tincture in a minute
of an hour; and perhaps in less
than half a quarter of an hour a
red one, being richly impregnated
with sulphureous Particles discover-
able by the Smell, Taste, and divers
Operations.

EXPER. II.

[T]Is known to several Chy-
mists, that Spirit of Salt
does not dissolve crude Mercury in
the cold; and I remember, I kept
them for a considerable time in no
contemptible heat without finding
any Solution following. But I sup-
pose, many of them will be gratified
by an Experiment once mention'd
to me by an Ingenious German Gen-
tleman, namely, That if Mercury
be

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be precipitated *per se*, that is, reduc'd to a red powder without additament, by the meer operation of the fire, the Texture will be so chang'd, that the above-mention'd Spirit will readily dissolve it; for I found it upon Trial to do so; nay, sometimes so readily, that I scarce remember that I ever saw any *Mensstruum* so nimbly dissolve any Metalline body whatsoever.]

EXPER. III.

THe former Experiment is the more remarkable, because, that though Oyl of Vitriol will in a good heat corrode Quicksilver, (as we have already related in the first Section,) yet I remember I kept a Precipitate *per se* for divers hours in a considerable degree of Heat, without finding it to be dissolved or corroded by the *Mensstruum*. And yet having, for trials sake, put another parcel of the same Mercurial powder

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der into some *Aqua fortis*, or Spirit of
Nitre, there insued a speedy Dissolu-
tion even in the cold.

And that this Disposition to be
dissolved by Spirit of Salt, that
Mercury acquires by being turned in-
to Precipitate *per se*, that is, by being
calcin'd, is not meerly the effect of
the operation of the fire upon it, but
of some change of Texture pro-
duced by that Operation; may be
probably argued from hence, that,
whereas Spirit of Salt is a very pro-
per *Menstruum*, as I have often tri-
ed, for the dissolving of Iron or
Steel; yet, when that Metal is re-
duced by the action of the fire (e-
specially if a kind of Vitrification,
and an irroration with distill'd Vi-
negar have preceded) to *Crocus*
Martis, though it be thereby
brought to a very fine powder, yet
I found not, that, as Spirit of Salt
will readily and with heat and noise
dissolve Filings of *Mars*, so it would
have the same or any thing near
such an Operation upon the *Crocus*;
but

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but rather, after a good while, it would leave in the bottom of the Glass a considerable, if not the greatest, part of it scarce, if at all, sensibly alter'd. And the Menstruum seem'd rather to have extracted a Tincture, than made an ordinary Solution; since the colour of it was a high yellow or reddish, whereas *Mars*, dissolved in Spirit of Salt, affords a green Solution. Whether by repeated Operations with fresh Menstruum further Dissolutions might in time be made, I had not occasion to try, and it may suffice for our present purpose, that *Mars* by the operation of the fire did evidently acquire, not, as Mercury had done, a manifest facility, but on the contrary, a great indisposition to be dissolved by Spirit of Salt.

To second this Experiment, we vary'd it, by employing, instead of Spirit of Salt, strong Oyl of Vitriol, which being pour'd on a little *Crocus Martis* made *per se*, did not, as that Menstruum is wont to do upon
on

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on Filings of crude *Mars*, readily
and manifestly fall upon the powder
with froth and noise, but (on the con-
trary) rested for divers hours calm-
ly upon it, without so much as
producing with it any sensible
warmth.

EXPER. IV.

IT agrees very well with our Do-
ctrine about the dependance of
the Corrosibility of Bodies upon
their Texture, that from divers Bo-
dies, whilst they are in conjunction
with others, there result masses, and
those homogeneous as to sense, that
are easily dissoluble in Liquors, in
which a great part of the matter, if
it were separated from the rest,
would not be at all dissolved. Thus
we see, that common Vitriol is ea-
sily dissolved in meer water; where-
as if it be skillfully calcin'd, it will
yield sometimes near half its first
weight of insipid Colcothar, which
not

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not onely is not soluble in water, but which neither *Aqua Fortis* nor *Aqua Regis*, though sometimes they will colour themselves upon it, are able (as far as I have tried) to make Solutions of. We see likewise, that simple water will, being boild for a competent time with Harts-horn, dissolve it and make a Jelly of it: And yet, when we have taken Harts-horn thoroughly calcin'd to whiteness, not onely we found that common water was no longer a fit Solvent for it, but we observed, that when we put Oyl of Vitriol it self upon it, a good part of the white powder was even by that Corrosive Menstruum left undissolved.

E X.

EXPER. V.

IN the *Fifteenth* of the foregoing Experiments I refer to a way of making the Flower or Powder of common Sulphur become *easily dissoluble*, which otherwise 'tis far from being, in highly rectified Spirit of Wine. Wherefore I shall now adde, that 'tis quickly perform'd by gently melting the Sulphur, and incorporating with it by degrees an equal or a greater weight of finely powder'd Salt of Tartar, or of fixt Nitre. For if the mixture be put warm into a Mortar that is so too; and as soon as 'tis reduc'd to powder, be put into a Glasse, and well shaken with pure Spirit of Wine, it will, (as perhaps I may have elsewhere observed,) in a few minutes acquire a yellow colour, which afterwards will grow deeper, and manifest it self by the smell and effects to be a real Solution of Sulphur; and

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and yet this Solubleness in Spirit of Wine seems procur'd by the change of Texture, resulting from the Commixtion of meer Salt of Tartar, which Chymists know, to their trouble, to be it self a body almost as difficult as Sulphur to be dissolved in phlegmless Spirit of Wine, unless the Constitution of it be first alter'd by some convenient additament. Which last words I adde, because, though Spirit of Verdigrease be a Menstruum that uses to come off in Distillation much more intirely than other acid Menstruums from the bodies it has dissolved; yet it will serve well for an additament to open (as the Chymists speak) the body of the Salt of Tartar. For this purpose I employ Spirit of Verdigrease, not made first with Spirit of Vinegar, and then of Wine, after the long and laborious way prescribed by *Basilus* and *Zwelfer*, but easily and expeditiously by a simple Distillation of crude Verdigrease of the better sort. For when you have
with

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with this Liquor (being, if there
be need, once rectified) dissolv'd as
much good Salt of Tartar, as 'twill
take up in the cold, if you draw off
the Menstruum *ad siccitatem*, the
remaining dry Salt will be manifestly
alter'd in Texture even to the eye,
and will readily enough in high recti-
fied Spirit of Wine afford a Soluti-
on, which I have found consider-
able in order to divers uses that
concern not our present Discourse.

EXPER. VI.

TO the Consideration of the Fol-
lowers of *Helmont* I shall
recommend an Experiment of that
famous Chymist's, which seems to
sute exceeding well with the Do-
ctrine propos'd in this Section. For
he tells us, that, if by a subtle Men-
struum to which he ascribes that
power. Quicksilver be devested (or
depriv'd) of its external Sulphur, as
he terms it, all the rest of the fluid
Metal,

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Metal, which he wittily enough styles, the Kernel of Mercury, will be no longer corrosible by it. So that upon this Supposition, though common Quicksilver be observ'd to be so obnoxious to *Aqua Fortis*, that the same quantity of that Liquor will dissolve more of it, than of any other Metal; yet, if by the deprivation of some portion of it the *latent Texture* of the Metal be alter'd, though not (that I remember) the *visible appearance* of it; the Body that was before so easily dissolved by *Aqua Fortis*, ceases to be at all dissoluble by it.

EXPER. VII.

AS for those Chymists of differing Sects, that agree in giving credit to the strange things that are affirm'd of the Operations of the *Alkabeft*, we may in favour of our Doctrine urge them with what is deliver'd by *Helmont*, where he as-

E sets,

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ferts, that all solid Bodies, as Stones,
Minerals, and Metals themselves, by
having this Liquor duly abstracted
or distill'd off from them, may be
changed into Salt, equiponderant
to the respective bodies whereon the
Menstruum was put. So that sup-
posing the *Alkabeſt* to be totally ab-
stracted, (as it seems very proba-
ble to be, since the weight of the
body whence 'twas drawn off is not
alter'd;) what other change than of
Texture can be reasonably imagin'd
to have been made in the transmuted
bodies? and yet divers of them,
as Flints, Rubies, Saphyrs, Gold,
Silver, &c. that were insoluble be-
fore, some of them in any known
Menstruums, and others in any but
Corrosive Liquors, come to be capa-
ble of being dissolv'd in common
water.

EX.

EXPER. VIII.

TIs a remarkable *Phænomenon*, that suits very well with our opinion about the interest of Mechanical Principles in the Corrosive Power of Menstruums, and the Corrosibility of bodies, that we produc'd by the following Experiment: This we purposely made to shew, after how differing manners the same body may be dissolv'd by two Menstruums, whose minute parts are very differinglly constituted and agitated. For whereas 'tis known, that if we put large grains of Sea-salt into common water, they will be dissolved therein calmly and silently without any appearance of conflict; If we put such grains of Salt into good Oyl of Vitriol, that Liquor will fall furiously upon them, and produce for a good while a hissing noise with fumes, and a great store of bubbles, as if a potent Menstru-

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um were corroding some stubborn
metal or mineral. And this Expe-
riment I the rather mention, because
it may be of use to us on divers other
occasions. For else 'tis not the
only, though it be the remarkablest,
that I made to the same purpose.

EXPER. IX.

FOR, whereas *Aqua Fortis* or *Aqua*
Regis, being pour'd upon Filings
of Copper, will work upon them
with much noise and ebullition, I
have tried, that good Spirit of Sal Ar-
moniac or Urine, being put upon the
like Filings, and left there without
stopping the Glass, will quickly be-
gin to work on them, and quietly dis-
solve them almost as water dis-
solves Sugar. To which may be
added, that even with Oyl of Tur-
pentine I have, though but slowly,
dissolved crude Copper; and the
Experiment seemed to favour our
Conjecture the more, because ha-
ving tried it several times, it ap-
pear'd,

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pear'd, that common unrectified Oyl would perform the Solution much quicker than that which was purified and subtiliz'd by rectification; which though more subtle and penetrant, yet was, it seems, on that account less fit to dissolve the Metal, than the grosser Oyl whose particles might be more solid or more advantageously shap'd, or on some other Mechanical account better qualified for the purpose.

EXPER. X.

TAke good Silver, and, having dissolv'd it in *Aqua Fortis*, precipitate it with a sufficient quantity of good Spirit of Salt; then having wash'd the Calx, which will be very white, with common water, and dried it well, melt it with a moderate fire into a fusible Mass, which will be very much of the nature of what Chymists call *Cornu Lunæ*, and which they make by precipitating dissolv'd

E 3

Sil.

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Silver with a bare Solution of com-
mon Salt made in common water.
And whereas both Spirit of Salt and
Silver dissolv'd in *Aqua Fortis* will
each of them apart readily dissolve
in simple water, our *Luna Cornea* not
onely will not do so, but is so indis-
pos'd to Dissolution, that I remem-
ber I have kept it in Digestion, some
in *Aqua fortis*, and some in *Aqua Re-*
gia, and that for a good while, and
in no very faint degree of heat, with-
out being able to dissolve it like a
Metal, the Menstruums having in-
deed ting'd themselves upon it, but
left the Composition undissolv'd at
the bottom.

With this Instance (of which sort
more might be afforded by Chymical
Precipitations) I shall conclude
what I design'd to offer at present
about the *Corrosibility* of Bodies, as
it may be consider'd in a more ge-
neral way. For as to the Disposi-
tion that Particular Bodies have of
being dissolved in, or of resisting,
Determinate Liquors, it were much
easier

Corrosiveness and Corrosibility. 69

easier for me to enlarge upon that Subject, than it was to provide the Instances ábove recited. And these are not so few, but that 'tis hop'd they may suffice to make it probable, that in the Relation betwixt a Solvent and the Body it is to work upon, that which depends upon the Mechanical affections of one or both, is much to be consider'd, and has a great interest in the operations of one of the bodies upon the other.

FINIS.